

Droughts and Wildfires

Q&A Notes and Resources

Links to resources:

- NC Climate Blog: <https://climate.ncsu.edu/ClimateBlog>
- NCICS Research highlights: <https://ncics.org/category/research-highlight/>
- NC Drought Management Advisory Council (monitors drought in the state): <https://ncdrought.org>
- NC Forestry Extension: <https://forestry.ces.ncsu.edu/>
- Southeast Climate Adaptation Science Center: <https://secasc.ncsu.edu>
- Joint Fire Science Program: <https://firescience.gov>
- Consortium of Appalachia Fire Managers and Foresters: <https://www.appalachianfire.org>
- Southern Fire Exchange: <https://southernfireexchange.org/>
 - Southern Fire Exchange YouTube - <https://www.youtube.com/user/SouthernFireExch>
- National Extension Wildland Fire Initiative: <http://www.anrep.org/newfi/>

Factsheets, reports, research briefs, and newsletters:

- This [fact sheet](#) is a good primer on fire and longleaf pine forests
- This [article](#) is helpful as well about longleaf pine forests and fire
- There is a research brief on the paper “Climate Change Projected to Reduce Prescribed Burning Opportunities in the Southeastern United States” in [this newsletter](#)
- Documents on longleaf resilience can be found [here](#).
- USDA publication [Effects of drought on forests and rangelands in the United States: translating science into management responses](#)
- Southern Fire Exchange Factsheets: <https://southernfireexchange.org/publications>
- Wildland Fire Programming: [A guide for extension and outreach professionals](#)

Additional webinars of interest:

- Great overview of the history of wildland fire in the Southeast US:
<http://www.humanecologyreview.org/pastissues/her142/fowlerandkonopik.pdf>
- These two webinars also cover our fire history from both a cultural and practical view:
 - <https://www.youtube.com/watch?v=wEezTRgLRK0>
 - <https://www.youtube.com/watch?v=HvVclMFgu-s&t=3s>
- Southern Fire Exchange related webinars:
 - Overview of the North Carolina Climate Science Report - Implications for Wildland Fire - <https://www.youtube.com/watch?v=buj0sz53eOM>
 - Prescribed Fire 101 - A Foundation in Ecology and Practice - <https://www.youtube.com/watch?v=TPkdbLqIKNg>

Panel Questions:

1. What are the research questions you see us tackling regarding drought, wildfires, and climate change over the next 5-10 years in NC?
 - Adam: We want to provide information that managers can use. We want to be able to incorporate near-term weather prediction with longer-term climate projections, so they can assess tradeoffs (e.g., burn now or wait a year, or five years, what are implications of waiting longer, e.g. 30 years)
 - Corey: The NC Climate Office is deploying some monitoring networks to better monitor organic soils' status in eastern NC. This will (hopefully) improve our ability to inform land managers if/when soils are at risk for fire/smoldering.
 - Laurel: We need to be more actionable on the research we have. We have research on when to burn, how to burn, and how to work with managers, but we need to be more actionable on using that research to inform managers.
2. A lot of the questions that have come in, for this or previous webinars, have been around outreach and coordinating communication. For example, a question came in specific to eastern NC: there's a large but transitory population here (thinking tourism), how do we elevate the general public's awareness of wildfire potential in this region of the state, particularly when they might be unfamiliar with the local climate, drought, and wildfire potential? Are there programs to inform people about wildfire potential/risks?
 - Laurel: Yes. Fire festivals and education days across the state are designed to raise awareness and educate the public. There are also some efforts to reach out to groups like realtors and insurance communities. However, there is limited capacity to do outreach to more transitory groups and some, like realtors and tourism, may be hesitant to discuss hazards like fire. There are efforts to communicate about prescribed fire.
 - Corey: I've seen both sides - from doing fire research as well as being affected by smoke impacts while vacationing at the Outer Banks. How can we alert people to fire risk or prescribed burn? Signs on the roadside? Do we need a Smokey-the-Bear-type communication specifically for the risks of coastal peat fires? How do we educate tourists without discouraging tourism?
 - Laurel: It can be hard to talk about wildfires and their impact: Clearly health or property damage are bad (negative impacts), but they are not necessarily bad from an ecological standpoint (positive impacts).
 - Can we put education materials in State Parks?
 - Adam: Yes, there are some. Also, it's important to make environmental education a core part of education in North Carolina schools. We should strive for fire literacy, and Extension can play a role in that through formal education and programs like 4-H.
 - Laurel: We are in the process of adapting the ['FireWorks'](#) curriculum for use in the south. Hope to have better tools soon here.
3. Can you speak to the tradeoffs between management actions that may make us more resilient to droughts (e.g, man-made reservoirs) and wildfires (e.g., roads that cut through forests) and their environmental impacts?
 - Adam: For prescribed, one of the main objectives is to reduce wildfire risk but also to maintain habitat (e.g., longleaf pine habitat; Fort Bragg is an example). More urban/sprawl

development can make it hard to maintain the same flexibility because you also have to consider air-quality impacts on nearby residents. This constrains the decision-making about whether conditions are appropriate, e.g. will smoke go up and away or will it hover lower over residential areas?

- Laurel: Fire-adapted species like longleaf pine tend to be more resilient to other hazards like insects or wind damage.

Questions submitted by attendees:

- An earlier webinar talked about El Niño and La Niña and how they can impact precipitation. Do the droughts in 1925-27, 2007-09 and 2019 correspond with El Niño?
 - Longer-term droughts, especially in winter, can be worse with La Niña, when the jet streams are typically more northward, leading to more drier, warmer air. This pattern can reduce rainfall and increase drying.
 - Don't see a lot of ENSO* impacts in summertime, so summer flash droughts less likely to be affected by ENSO patterns.
 - *ENSO is the El Niño Southern Oscillation, which has two phases: warm (El Niño) and cool (La Niña), with neutral in between. For more on ENSO, read the State Climate Office's webpage: <https://climate.ncsu.edu/climate/patterns/enso>
- What are the proportions of demand? For example, how much do residential restrictions help compared to agricultural, industry or institutional restrictions? Or, from the opposite perspective, how much of the increased demand is residential vs. institutions, *etc.*?
 - [This USGS report](#) from 2018 breaks down the water use by sector in the state as of 2015. [This page on NC DEQ's website](#) has information about water use reporting and conservation measures.
- Are the restrictions, *etc.* similar for flash droughts vs. longer-term droughts?
 - Implementation of conservation restrictions by water utilities are often triggered by multiple indicators, such as upstream streamflow, remaining reservoir storage, time of year and water demand, and the US Drought Monitor. In this sense, restrictions are no different for a flash drought than a "regular" drought; however, flash droughts, because they develop much more quickly, can sometimes develop and abate before widespread water use restrictions are implemented.
- Other than habitat/ecological management, are prescribed burns impacting different acres than wildfires, even if the amount of acres is the same? For example, if the same number of acres burned, why would it be better for there to be a prescribed burn instead of a wildfire?
 - Adam: With a prescribed fire you can control the behavior and the timing. So you can set the fire when you're sure it won't get out of control because say it's windy and hot and dry. That way you can burn off the fuel that's there in a safe way. If you wait for a wildfire to take care of that...it's likely to be when conditions are more favorable for that fire to end up being a HUGE fire that you can't control and that also spreads to areas that WILL burn (because of the hot, dry, windy conditions) but that you did NOT want to burn.
- Have insurance rates been tied to fire prevention practices in NC?
 - Laurel: Not really. Insurance companies have not had to pay out damages enough in NC to be willing to offer discounts for fire mitigation actions

Ice breaker: How is drought and/or wildfire relevant to your professional work? Response themes:

- Research: studying climate change and managing or mitigating wildfire risk while meeting fire-dependent management objectives (i.e. maintaining healthy longleaf pine habitat for wildlife)
- Work in water resources: drought has a big impact on water use, as well as water in our waterways.
- Working with or as a master gardener to increase awareness and education in communities about weather impacts to gardens, how to manage homes and gardens in response to events and potential events, and [Firescaping](#).
- Environmental education work with 4-H and for youth and adults; climate change is a big issue that comes up.
- For animals in agriculture, drought and wildfire can mean having to move thousands (or more) animals, or losing animals